HPC Tutorial Topics Chapter 9

1. Graph an ellipse given an equation in standard form. (center not at (0,0)).
   Explain foci, center, vertices, major and minor axis, and relationship between a, b, c.

2. Find the equation of an ellipse given:
   (foci and vertices), (foci and y-intercepts) and (lengths of major and minor axis)

3. Convert equation of an ellipse into standard form by completing the square.

4. Create a real world example of an ellipse.
   (bridge, domed ceiling).

5. Graph a hyperbola given an equation in standard form (center not at (0,0)).
   Explain foci, center, vertices, transverse axis and asymptotes.

6. Find the equation of a hyperbola given:
   (center, foci and vertices) and (endpoints of transverse axis and asymptote).

7. Convert equation of hyperbola into standard form by completing the square.

8. Graph a parabola given an equation in standard form (vertex not at (0,0)).
   Explain vertex, focus, directrix and focal width.

9. Find the equation of a parabola given:
   (focus and directrix) and (vertex and focus)
10. Convert equation of a parabola into standard form by completing the square.

11. Create a real world example of a parabola (bridge, satellite dish)

12. Given two parametric equations, eliminate the parameter and then describe the graph.

13. Create a real world example using parametric equations and projectile motion.